

Abhishek Shetty

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Research Interests

Sequential Decision Making, Beyond Worst-case Analysis of Algorithms, Online Learning, Discrepancy Theory, Differential Privacy, Applied Probability, Pseudorandomness

Education

- **University of California** **Berkeley, CA**
Ph.D in Computer Science 2021–
- **Cornell University** **Ithaca, NY**
Ph.D in Computer Science 2019–2020
- **Indian Institute of Science** **Bangalore, India**
B.Sc. (Research) in Mathematics 2013–2017
First Class with Distinction

Employment

- **Apple** **Cupertino, CA**
Research Intern *May 2023– August 2023*
with Parikshit Gopalan
- **Microsoft Research New York** **NYC, NY**
Research Intern *June 2022– August 2022*
with Akshay Krishnamurthy and Cyril Zhang
- **Microsoft Research New England** **Cambridge, MA**
Research Intern *June 2021– August 2021*
with Lester Mackey
- **Microsoft Research India** **Bangalore, India**
Research Fellow *2017–2019*
with Navin Goyal

Selected Awards and Honors

- 2023:** Apple AI/ML PhD Fellowship
- 2022:** American Statistical Association SSCG Best Student Paper
- 2022:** Invited Paper at SIAM Journal on Computing (SICOMP) STOC Special Issue
- 2022:** Qualcomm Innovation Fellowship Finalist
- 2019–2020:** Cornell University Fellowship
- 2013–2017:** Kishore Vigyan Protsahan Yojana Fellowship

2009–13: National Talent Search Scholarship

Publications

Peer Reviewed Conference Proceedings.....

- Optimal PAC Bounds without Uniform Convergence** C12
with Ishaq Aden-Ali, Yeshwanth Cherapanamjeri and Nikita Zhivotovsky
Foundations of Computer Science (FOCS), 2023
- One-Inclusion Graph is not Always Optimal** C11
with Ishaq Aden-Ali, Yeshwanth Cherapanamjeri and Nikita Zhivotovsky
Conference on Learning Theory (COLT), 2022
- Oracle-Efficient Online Learning for Beyond Worst-Case Adversaries** C10
with Nika Haghtalab, Yanjun Han and Kunhe Yang
Conference on Neural Information Processing (NeurIPS) **Oral Presentation**, 2022
- Matrix Discrepancy from Quantum Communication** C9
with Sam Hopkins and Prasad Raghavendra
Symposium on Theory of Computing (STOC), 2022
Invited to **SIAM Journal on Computing (SICOMP) STOC Special Issue**
- Distribution Compression in Near-linear Time** C8
with Raaz Dwivedi and Lester Mackey
International Conference on Learning Representations (ICLR), 2022
Awarded American Statistical Association SSCG **Best Student Paper**, 2022
- Smoothed Analysis with Adaptive Adversaries** C7
with Nika Haghtalab and Tim Roughgarden
Foundations of Computer Science (FOCS), 2021
- Fractional Pseudorandom Generators from Any Fourier Level** C6
with Eshan Chattopadhyay, Jason Gaitonde, Chin Ho Lee and Shachar Lovett
Computational Complexity Conference (CCC), 2021
- Smoothed Analysis of Online and Differentially Private Learning** C5
with Nika Haghtalab and Tim Roughgarden
Conference on Neural Information Processing Systems (NeurIPS) **Spotlight Presentation**, 2020
- Effect of Activation Functions on the Training of Overparametrized Neural Nets** C4
with Abhishek Panigrahi and Navin Goyal
International Conference on Learning Representations (ICLR), 2020
- Sampling and Optimization on Convex Sets in Riemannian Manifolds of Non-Negative Curvature** C3
with Navin Goyal
Conference on Learning Theory (COLT), 2019
- Non-Gaussian Component Analysis using Entropy Methods** C2
with Navin Goyal
Symposium on Theory of Computing (STOC), 2019
- Exponential Weights on the Hypercube in Polynomial Time** C1
with Sudeep Raja Putta
International Conference on Artificial Intelligence and Statistics (AISTATS), 2019

Journal Publications

Oracle-Efficient Online Learning for Beyond Worst-Case Adversaries

with Nika Haghtalab, Yanjun Han and Kunhe Yang

Under Submission

Operations Research

J3

Smoothed Analysis with Adaptive Adversaries

with Nika Haghtalab and Tim Roughgarden

Major Revisions with Positive Reviews

Journal of the ACM

J2

Matrix Discrepancy from Quantum Communication

with Sam Hopkins and Prasad Raghavendra

Invited to SIAM Journal on Computing (SICOMP) STOC Special Issue

J1

Preprints

Adversarial Resilience in Sequential Prediction via Abstention

with Surbhi Goel, Steve Hanneke and Shay Moran

Under Submission

P4

Smoothed Analysis of Sequential Probability Assignment

with Alankrita Bhatt and Nika Haghtalab

Under Submission

P3

Smoothed Nash Equilibria: Algorithms and Complexity

with Constantinos Daskalakis, Nika Haghtalab and Noah Golowich

Under Submission

P2

Progressive Knowledge Distillation: Building Ensembles for Efficient Inference

with Don Kurian Dennis, Anish Sevekari, Kazuhito Koishida and Virginia Smith

Under Submission

P1

Workshops

Progressive Knowledge Distillation: Building Ensembles for Efficient Inference

with Don Kurian Dennis, Anish Sevekari, Kazuhito Koishida and Virginia Smith

Efficient Systems for Foundation Models (ES-FoMo), 2023

W3

Distribution Compression in Near-linear Time

with Raaz Dwovedi and Lester Mackey

Advances on Approximate Bayesian Inference 2022

W2

Smoothed Analysis of Differentially Private and Online Learning

with Nika Haghtalab and Tim Roughgarden

Workshop on the Theory and Practice of Differential Privacy (TPDP), 2020

W1

Invited Talks

Optimal PAC Bounds without Uniform Convergence

Google Research Theory Seminar, UPenn CS Theory Seminar

2023

Matrix Discrepancy and Quantum Communication

IISc-MSR Theory Seminar, STOC 2022, MIT Algorithms and theory seminar

2022

Data Summarization: Privacy and Compression

Berkeley AI Research Symposium

2021

Quantum Communication Lower Bounds and Matrix Discrepancy <i>Quantum Brainstorming Session at Simons</i>	2021
Distribution Compression in Nearly Linear Time <i>MSR New England ML Ideas Seminar, Joint Statistical Meeting (JSM)</i>	2021
Smoothed Analysis of Online Learning <i>Cornell Theory Seminar, Stanford Theory Seminar, IISc CS Theory Seminar</i>	2021-22
Smoothed Analysis of Online and Differentially Private Learning <i>NeurIPS 2020</i>	2020
Non-Gaussian Component Analysis <i>MSR New England, Cornell Theory Seminar, Bangalore Probability Seminar, MSR India, STOC 2019</i>	2019
Sampling and Optimization on Convex Sets in Riemannian Manifolds of Non-Negative Curvature <i>COLT 2019</i>	2019

Mentorship and Service

EECS Grad Peers <i>UC Berkeley</i>	2023
Graduate Admissions Committee <i>UC Berkeley</i>	2022

Teaching

Teaching Assistant <i>UC Berkeley</i> Decisions, Learning and Games	Spring 23
Teaching Assistant <i>UC Berkeley</i> DATA 102: Data, Inference and Decisions	Spring 22
Teaching Assistant <i>Cornell University</i> Foundations of Modern Machine Learning	Spring 20
Teaching Assistant <i>Indian Institute of Science</i> Computational Complexity Theory (E0 224)	Fall 16
Teaching Assistant <i>Indian Institute of Science</i> Theoretical Foundations of Cryptography	Fall 16

Professional Activities

Reviewer <i>Symposium on Discrete Algorithms (SODA), 2024</i>	2023
Reviewer <i>Conference on Neural Information Processing (NeurIPS), 2023</i>	2023
Reviewer <i>Foundations of Computer Science (FOCS), 2023</i>	2023

General Program Committee	
<i>Conference on Learning Theory (COLT), 2023</i>	2023
Reviewer	
<i>Journal on Theory of Computing</i>	2022
Reviewer	
<i>Symposium on Discrete Algorithms (SODA), 2023</i>	2022
Reviewer	
<i>Symposium on Theory of Computing (STOC), 2022</i>	2021
Reviewer	
<i>Symposium on Theory of Computing (STOC), 2021</i>	2020
Organizer	
<i>Microsoft Research India Theory Lunch Seminar</i>	2018–19
Organizer	
<i>Cornell Learning Theory Reading Group</i>	2019
Reviewer	
<i>Symposium on Theory of Computing (STOC), 2020</i>	2019
Reviewer	
<i>Conference on Learning Theory (COLT), 2020</i>	2020
Reviewer	
<i>International Conference on Machine Learning (ICML), 2020</i>	2020
Reviewer	
<i>Symposium on Discrete Algorithms (SODA), 2020</i>	2019
Reviewer	
<i>Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), 2018</i>	2018
Reviewer	
<i>International Cryptology Conference (CRYPTO), 2019</i>	2018
Reviewer	
<i>International Conference on Public-Key Cryptography (PKC), 2018</i>	2017